

Studies in the Pacific Bombyliidae (Diptera). 10. Bombyliidae of New Caledonia

Neal L. EVENHUIS

J. Linsley Gressitt Center for Research in Entomology
Department of Entomology
Bishop Museum, P.O. Box 19000-A
Honolulu, Hawaii 96817, USA

ABSTRACT

The species of bee flies presently known from New Caledonia are listed, and some new records are given; morphological variations are discussed for some species. A new species, *Anthrax matilei*, is described, as well as the new genus *Exechohypopion*, for *E. greatheadi* n. sp. The systema-

tic position of *Exechohypopion* is discussed, and species from Vanuatu, Australia and Chile are attributed to this new taxon; the genus thus possibly belongs to the transantarctic generalized track.

RÉSUMÉ

Les Bombyliidae actuellement connus de Nouvelle-Calédonie sont énumérés. Deux espèces inédites sont décrites; l'une d'entre elles appartient au nouveau genre *Exechohypo-*

plon, qui contient également des espèces de Vanuatu, d'Australie et du Chili; cette répartition indique qu'il appartient vraisemblablement au tracé transantarctique.

The Bombyliidae of New Caledonia are poorly known. Other than the present study, the only papers pertaining to or mentioning New Caledonian bee flies are CURRAN (1929), WILLIAMS (1945) and EVENHUIS (1979a, 1979b, 1982, 1989). EVENHUIS (1982) recorded a high percentage of endemism in the New Caledonian bombyliid fauna. Though the numbers and identities of genera and species given in that paper are corrected and revised in this study, the high percentage of endemism remains. All the species presently known from New Caledonia except one are endemic. Figures presented in EVENHUIS (1982) were based on preliminary taxonomic knowledge of the New Caledonian taxa and it was thought that some of those taxa would be conspecific with those in Australia. Further study since that paper and subsequent comparisons of type material of Australian species leads

me to conclude that only *Villa macquarti* Evenhuis, 1989, is found in both New Caledonia and Australia. Further revisionary work on the *Villa* complex in this region may show *macquarti* to be restricted to Australia. However, examination of specimens in the present study shows that the New Caledonian and Australian specimens fitting the characters of *macquarti* are conspecific.

Little new material of previously described species of New Caledonian Bombyliidae was found in this study, which was based on material in the Bishop Museum, Honolulu (BPBM) and the Muséum National d'Histoire Naturelle, Paris (MNHN). Because of the paucity of material and the poor knowledge of the fauna, all species currently known from New Caledonia are listed in this study.

The arrangement of suprageneric categories and genera follows EVENHUIS (1989).

Subfamily SYSTROPODINAE

Genus *ZACLAVA* Hull, 1973

Zaclava kraussi Evenhuis, 1979

The original description in EVENHUIS (1979a) adequately serves to separate this endemic New Caledonian species from its Australian conge-

ners. Only one additional specimen has been found in collections since the original description. No females are yet known of this species.

Material : Baie du Prony, west side, 0-10 m, 14.VIII.1979 (W. GAGNÉ) : 1 ♂ (BPBM).

Subfamily GERONTINAE

Genus *GERON* Meigen, 1820

Geron aaptis Evenhuis, 1979

This species is known only from the holotype male, allotype female, and one additional male examined in this study. The specimen examined fits the previously described characters well. No range of variation has yet been found in any of the salient characters defining this species.

Material : Nouméa, 0-50 m, 7.II.1971 (N. L. H. KRAUSS) : 1 ♂ (BPBM).

Geron aeston Evenhuis, 1979

Known only from the holotype male and allotype female. No further material of this species has been examined.

In addition to the characters given in EVENHUIS (1979b), both *aaptis* and *aeston* may be separated from the more common New Caledonian species, *Geron neutralis*, by the generally smaller size and brown body coloration; *G. neutralis* has black to gray body color.

Geron neutralis Evenhuis, 1979

This is the most common species of *Geron* found in New Caledonia. It is found throughout New Caledonia in addition to the Loyalty Islands. Since the original description, a few more specimens have been examined. A series of males and females from Nouméa differ slightly from the remainder of the known specimens of *neutralis*, but not enough to warrant separate taxonomic recognition. Males of the "Nouméa" form have a much more extensive cinereous pollinose and silvery white tomentose lower

postocular portion of the occiput than do typical *neutralis*; females of the "Nouméa" form characteristically have the laterotergite and basal segments of the sternum with orange to yellowish orange ground color (this ground color is typically black to brown in other specimens of this species).

Material: Nouméa, 0-50 m, 7.II.1971 (KRAUSS): 50 ♀; same data, II.1976 (KRAUSS): 2 ♀; same data, III.1978 (KRAUSS): 2 ♀. Thio, 0-50 m, 7.I.1969 (KRAUSS): 1 ♀ (all BPBM).

Subfamily ANTHRACINAE

Tribe ANTHRACINI

Genus *ANTHRAX* Scopoli, 1763*Anthrax matilei* n. sp.

Description: male. Head. Ground gray-brown, yellowish surrounding antennal sockets and along buccal margin; short, dense black pilose, sparse erect thin white tomentum may be intermixed on lower front and face; occiput gray-black, fringe reddish brown, posterolateral portion at point of compound eye bisection white tomentose; antenna gray to gray-black, black pilose on segments I-II, segment III with typical bulbous base and thin neck; style about 1/2 length of neck, with long tuft of reddish brown hairs apically, length of tuft subequal to style.

Thorax. Gray-brown dorsally owing to yellowish waxy coating (abraded areas show black ground color); pleura gray to brown; dorsum of mesonotum with sparse short fine brown hairs, sparse recumbent whitish hairs intermixed, with black setae, these setae becoming most dense anteriorly, anteriormost portion of mesonotum with dense white fringe of setae; humeral callus and notopleural region intermixed black and white pilose; macrochaetae black; postalar callus and scutellum with black setae; scutellum with white tomentum on posterior margin; propleuron predominantly brown to black pilose,

white pile intermixed on upper portion; mesopleuron white pilose above, short fine brownish pilose on lower 2/3; pteropleuron with 3-4 black subalar setae and tuft of intermixed brown and white setae; sternopleuron sparse intermixed long and short brownish pilose, brown tomentose; hypopleuron bare; halter stem yellowish brown with small basal patch of black hairs, knob brown to dark brown basally, yellowish brown apically; plumula brown pilose to intermixed brown and white pilose.

Legs. Coxae concolorous with pleural ground color, with black bristles and long fine brown hairs laterally, remainder of leg segments brown to dark brown; femora with brownish scales having whitish relections, fine brown hairs ventrally; fore femur with row of 6-12 short black bristles on basal portion of anterodorsal surface, a few additional short black bristles subapically on dorsal surface; mid femur with strong black bristles along entire anterodorsal surface; hind femur as in mid femur but more heavily armed with black bristles; tibiae with rows of small black spicules along entire length, with yellowish scales; tarsi with dense fine brown hairs and sparse black spicules on apical margin of each segment; claws black; pulvilli almost as long as claws.

Wing. Infuscated dark brown basally and along anterior margin, with spots in otherwise hyaline posterior portion; veins brown; dark brown opaque spots at following locations:

junction of veins R_1 and R_{4+5} at vein between apex of discal cell and second posterior cell, and at base of third posterior cell; a coalesced spot at r-m crossvein and junction of veins R_{2+3} and R_{4+5} ; basal infuscation includes all of second basal cell, 3/4 of anal cell, and 1/2 of anal lobe; infuscation fades to brown in anal lobe; r-m crossvein slightly distad of junction of R_{2+3} and R_{4+5} ; bases of R_{2+3} and R_4 with long recurrent appendices; anal cell open in wing margin; squama white with fringe of white scales.

Abdomen. Subshining black with brown highlights, thin margin of brown along posterior edges of tergites, extreme lateral margins of tergites brown; tergite I with dense white pile anterolaterally, white pile extending, but interrupted, medially, with black pile posterolaterally, extending medially along posterior margin as row of black hairs; tergites II-VII with dense black pile laterally, sparser and shorter dorsally; black tomentum dorsally on tergites II-IV; tergites V-VII with dense patches of white tomentum laterally, less dense or absent medially; this tomentum may also be present as small lateral patch on posterior margin of tergites II and III;

sternites with sparse fine dark brown hairs and fine sparse yellow recumbent hairs.

Genitalia (fig. 1). In lateral view with basistylus subrounded, with large basal extension and long apicomedial lobe; dististylus length $2 \times$ width, with basal flange-like process, with slightly upturned hook apically; epiphallus as in fig. 2; apex of epiphallus trifold, with medial process hooked and downturned; bulb of aedeagus large, convex medially, fused laterally with lateral rami; basal aedeagal apodeme very large, rounded, slightly vaned basolaterally; lateral rami large, subtriangular, convex ventrally.

Measurements. Length of body, 8.0-11.0 mm. Length of wing, 9.0-12.0 mm.

Female. Differs from male as follows:

Head. Ground color all black, thin white tomentum absent on front; tuft of hairs at apex of antenna 1/2 length of stylar segment.

Thorax. Pleura all brown; plumula all white-haired; prescutellar tomentum squamose and whiter; halter stem with basal hairs all white.

Legs. Fore tibiae more heavily armed with black spicules; claws smaller.

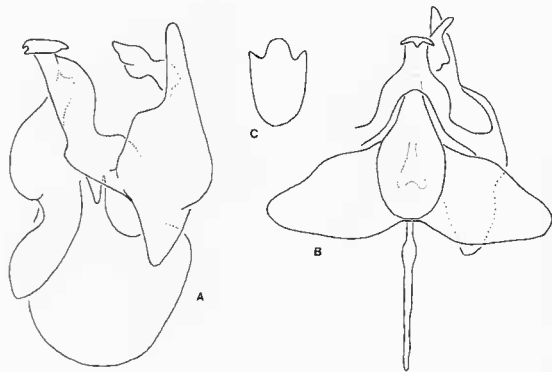


FIG. 1. *Anthrax mutilei* n. sp., male genitalia: a) lateral view; b) ventral view; c) enlargement of tip of epiphallus, caudal view.

Abdomen. Dorsum with denser dark brown tomentum on tergites II-VII; lateral and posterior margins of tergite I without black pile; tergites V-VII with scattered small patches of white tomentum; white tomentum on posterior margin of tergite II almost a complete transverse band.

Measurements. Length of body, 9.0 mm. Length of wing, 10.0 mm.

Type material: holotype ♂: near Nouméa, IX.1940, in *Eumenes* nest mass (F. X. WILLIAMS), BPBM Type n° 14752. Paratypes: Nouméa, 16.X.1940 (WILLIAMS): 1♂. Oua Tom, 20.IX.1940 (WILLIAMS): 2♀. Anse Vata, 15.XI.1958 (C. R. JOYCE): 1♂. 10 km NW of Plum, 24.III.1968 (J. L. GRESSITT & T. C. MAA): 1♂. Col des Roussettes, 350-450 m, 3.II.1971 (KRAUSS): 1♀; same data except 450-550 m, 4-6.II.1963 (C. M. YOSHIMOTO): 1♂. La Croeu, 16.II.1961 (J. SEDLACEK): 1♀ (all in BPBM). Rivière Bleue, maquis sur crête, 310 m (L. BONNET DE LARBOGNE, J. CHAZEAU, A. & S. TILLIER): 2♀ (MNHN). No locality, 2.IV.1970 (A. N. GILLOGLY & S. KEENAN): 1♀ (BPBM).

Discussion: this species was referred to in WILLIAMS (1945) as "*Argyramoeba distigma* (?)". It was recorded therein as a parasite of the vespid wasp, *Eumenes germaini* and illustrated in his fig. 8. The specimen used for the illustration, now deposited in the Bishop Museum, is teneral but is in excellent condition and exhibits all the salient characters of the species. It is here chosen as the holotype. Torsion of the genitalia in this species apparently takes place some time after emergence, much as in *Xenox* Evenhuis (see EVENHUIS, 1985). The genitalia of the teneral holotype are not rotated and the dististyli are splayed.

An additional specimen, not included in the type series, carries a hand-written label that appears to say "Noumea". The adult is pinned above a pupal exuvium and is in poor condition, having been eaten by psocids; the abdomen is destroyed, thus it cannot be accurately sexed. It is provisionally placed with the other specimens of *matilei*.

Anthrax matilei is a member of the *distigma* complex of species, which are found throughout the Oriental, Australasian, and Oceanian regions. All appear superficially similar, but differ in characters of the male genitalia. *Anthrax matilei*

can be distinguished from most members of the *distigma* complex by the more prominent maculations in the hyaline portion of the wing. Characters of the male genitalia distinguish this species from others in the complex. BOWDEN (1971) described and illustrated some male genital characters of the widespread Melanesian species *A. semiscitus* Walker. *Anthrax matilei* differs from *semiscitus* and related species by the shape of the tip of the epiphallus. It is prominently trifid and narrow in *matilei*; it is less trifid and much broader in *semiscitus*.

There is some variation in the amount of infuscation in the wing. Most evident is the coalescing of the spots at the r-m crossvein and the apex of the discal cell. Many specimens of *matilei* possess separate spots at these points, but others have these spots coalesced, thus appearing as a large transverse band extending down from the anterior margin of the wing. The male genitalia are characteristic for this species, however, the bulb of the aedeagus can be either concave or convex near the middle. Also the lateral rami can be concave or convex.

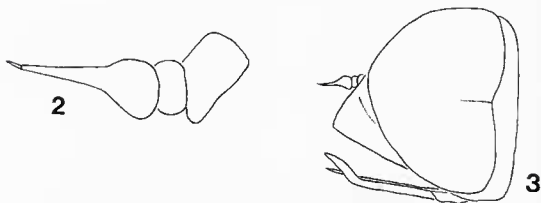
Etymology: it gives me great pleasure to name this species in honor of D' Loïc MATILE.

Tribe EXOPROSPINI

Genus *EXECHOHYPOPION* n. g.

Type species: *Exechohypopion greatheadi* n. sp.

Description: male and female. Head (fig. 3). Subglobular, ground color dull gray to black; males and females dichoptic, eyes at vertex separated by about 2 × width of ocellar tubercle in males, slightly more in females; front bulging only slightly; face prominent, conical, extending almost to length of antenna, similar to condition found in *Paravilla* Painter; antenna with segment I subcylindrical, projecting mesoapically; segment II globular, narrower than width of segments I or III; segments I and II black pilose; segment III (fig. 2) conical basally, tapering sharply to thin apical neck area; separate stylar segment found in other *Villa* group genera absent, style arista-like, bare; proboscis



FIGS 2-3. — *Exechohypopion greatheadi* n. g. n. sp. 1: antenna; 2: head, lateral view.

thin, held within buccal rim; maxillary palpus one-segmented.

Thorax. Ground color dull gray to gray-brown, width subequal to width of head, dense pilose anterodorsally and anterolaterally, dorsum with tomentum; machrochaetae present in prealar area and on postalar callus; pleura concolorous with mesonotum; hypopleuron bare, small patch of hairs or tomentum may be present posteroventrally in some specimens; halter stem thin, knob globose.

Legs. Thin; coxae concolorous with or darker than pleural ground color, with tomentum and strong setae and fine hairs; fore femur and tibia without spines, small fine erect hairs present; mid and hind femora and tibiae with usual complement of spines and spicules; tarsi and claws normal; pulvilli absent.

Wing. Predominantly hyaline to subhyaline, often with iridescence in hyaline field, infuscated brown at extreme base (proximal to arculus) and along costal margin to end of cell Sc; white scales (some with silvery reflections) on tegula and at base of costal vein; with two submarginal and four posterior cells; anal cell open in wing margin; r-m crossvein slightly distad of junction of veins R_{2+3} and R_{4+5} ; width of second, third, and fourth posterior cells subequal; anal lobe and alula well developed; alula and squama infuscated with opaque color, each possessing fringe of scales.

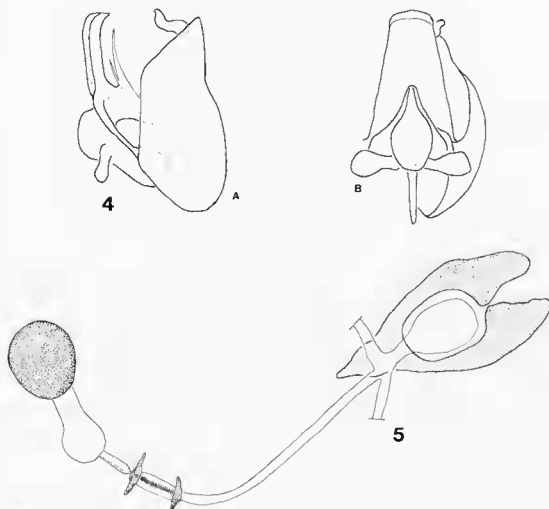
Abdomen. Broad, subequal in width to thorax; seven visible segments in both sexes; ground color dull; dorsum with transverse bands of contrasting pale and dark tomentum; erect pile

sparse, short, predominantly black; venter sparse long pale pilose and sparse pale tomentose.

Male genitalia (fig. 4). In lateral view with basistylus subtrapezoidal, subequal to or slightly shorter than epandrium; dististylus short, length $2 \times$ width, apex of varying shapes, often bifid; epiphallus consisting of a shorter dorsal and longer ventral complex of sclerites as in fig. 4a; tip of epiphallus broad, of varying specific shapes; aedeagal bulb large; basal aedeagal apodeme small, rounded, concealed within basistylus; lateral rami short, small; epandrium subquadrate; cercus moderately large, well exerted.

Female genitalia (fig. 5). Acanthophorites with 6-8 darkly sclerotized spines with spoon-like apices; vaginal apodeme V-shaped, thickly sclerotized laterally, fused or separate basomedially; spermathecal reservoir complex consisting of sclerotized apical spermathecal reservoir and subcylindrical membranous basal sac expanded at extreme base into bulb subequal in size to apical reservoir; apical spermathecal duct short, sclerotized, length subequal to ejection apparatus; ejection apparatus short, sclerotized; apical and basal valves disc-shaped, sclerotized; basal duct membranous, length about $2 \times$ length of spermathecal reservoir complex, leading to membranous common duct.

Discussion: this genus runs to *Laminanthrax* Greathead using the key to the Old World genera of the *Villa* group in GREATHEAD (1981) if one ignores the rounded face character in couplet 5. As GREATHEAD (1981) points out, separation of the genera of the *Villa* group based on a single



FIGS 4-5. — *Exechohypopion greatheadi* n. g. n. sp. 4: male genitalia: A, lateral view; B, ventral view; 5: female genitalia

character is difficult at best. The genera in this complex are each best defined by a mosaic of characters. There are no known Old World genera other than *Exechohypopion* that possess the combination of a conically produced face, third antennal segment without a separate apical style segment, and smooth fore tibiae. The characters of the female spermathecal reservoir complex further distinguish *Exechohypopion* from other *Villa* group genera from the Old World. The male genitalia appear most similar to *Veribubo* Evenhuis, but can be separated primarily by the broader tip of the epiphallus and longer dorsal portion of the epiphallic complex.

Using the key to genera in HALL (1975), this

genus runs to *Exhyalanthrax* Becker. Characters given in GREATHEAD (1981) of true *Exhyalanthrax*, which occurs from the Afrotropical Region eastward to India and Southeast Asia, preclude species in *Exechohypopion* from belonging to that genus. *Exechohypopion* is actually closer to *Diplocampta* Schiner from Chile and western Argentina than to *Exhyalanthrax*. It can be separated from *Diplocampta* by the lack of a highly contorted vein R_3 and the presence of two submarginal cells in the wing (though a few species of *Diplocampta* have two submarginal cells).

A few Australian species have been examined that are found in the present study to belong to

this genus. Further revisionary studies should reveal many more species of this genus from Australia. The new combinations include (original genus in parentheses): *Exechohypopion albatum* (Roberts) (*Villa*), *E. brunum* (Roberts) (*Villa*), *E. minus* (Macquart) (*Anthrax*), *E. nigricostatum* (Macquart) (*Anthrax*), *E. obscurum* (Macquart) (*Anthrax*), and *E. velox* (White) (*Anthrax*). There is also an undescribed species of *Exechohypopion* before me from Vanuatu.

The species from Chile placed by HALL (1975) in *Exhyalanthrax* Becker possess the characters of *Exechohypopion* and also require transferral here. The resulting new combinations include (original genus in parentheses): *Exechohypopion corrigiolatum* (Rondani) (*Anthrax*), *E. inglorium* (Philippi) (*Anthrax*), *E. leucomallum* (Philippi) (*Anthrax*), *E. nigrocurum* (Hall) (*Villa*), *E. praeteritum* (Oldroyd) (*Villa*), and *E. unum* (Oldroyd) (*Villa*).

Thus, the distribution of *Exechohypopion* includes Australia, New Caledonia, Vanuatu, and Chile, which implies a possible transantarctic track similar to other Southern Hemisphere Bombyliidae such as the Comptosiini and some Dischistini and Mythicomyiinae.

Etymology: the name derives from the Greek "exechos" = prominent + "hypopion" = part of the face under the eyes.

Exechohypopion greatheadi n. sp.

Description: male. Head, dull black, brown surrounding antennal sockets, with short, erect black hairs; dull golden tomentum on lower front and entire face; eyes dichoptic, at closest distance just anterior to ocellar tubercle; width of separation at ocellar tubercle almost 2 × that of ocellar tubercle; hind margin of eye at bisection only slightly indented; occiput black, thinly cinereous pruinose, with short erect black hairs and dull golden yellow tomentum laterally; occipital fringe intermixed dense short reddish brown and yellow pilose; antenna black to gray brown; segment I cylindrical, with mesal projection, length 2 × width, with thick black setae 3/4 to subequal to length of segment on lateral, dorsal, and mesal surfaces; segment II subspherical, slightly wider than long, with a few short black setae on dorsolateral surface; seg-

ment III (fig. 3) conical at base, tapering to long thin apex; arista terminal, minute; proboscis black to brown, length about equal to buccal rim; labellae about 1/4 length of proboscis; maxillary palpus one-segmented, thin, dark brown, length about 1/2 length of proboscis.

Thorax. Mesonotum and scutellum dull black; post alar callus and posterior margin of scutellum brownish; dorsum of mesonotum with sparse short erect black hairs and dull golden yellow tomentum, erect hairs denser laterally and anteriorly, anterior pile dense intermixed yellow and black, minute dark brown to black scales dorso-laterally and on post alar callus; scutellum with dark brown scales basally, yellow tomentum posteriorly, sparse long erect fine hairs on disc, thicker on posterior margin; pleura gray to gray brown on meso- and metapleura, brown ground color elsewhere; notopleural stripe predominantly yellow pilose, some black pile intermixed on anterior portion of humeral callus; propleuron brown to black pilose, at most a few yellow hairs may be mixed in; macrochaetae at root of wing black; mesopleuron intermixed yellow and black pilose above, shorter, finer black hairs below, reddish tuft of hairs directed posteriorly; pteropleuron intermixed reddish brown and black pilose; sternopleuron sparse black haired, some long tomentose-like hairs with yellowish reflections on lower portion; metapleuron yellow pilose above and posteriorly, black pilose elsewhere; hypopleuron bare; halter stem yellowish, with pale yellow to creamy white knob.

Legs. Concolorous with lower pleura; fore coxa with short sparse yellow hairs, black hairs at apex, with yellow scales along entire length; mid coxa with long reddish brown setae laterally, with sparse pale yellow scales; hind coxa with intermixed white and black hairs laterally, some white and pale yellow scales scattered; fore femur not armed with bristles; mid and hind femora with two black bristles anteroventrally; hind femur with dense brown scales laterally, yellow to white scales mesally; fore tibia with only fine hairs; mid and hind tibia and tarsi with normal complement of bristles and spicules; claws black; pulvilli absent.

Wing. As in generic description; scales at base of costal vein with silvery reflections (especially in fresh specimens); anterior wing infuscation fading toward end of costal cell; cell Sc infuscated opaque brown to end of vein Sc; end of vein

Sc with small appendix, this appendix fused to vein R₁ in some specimens; squama dark gray-brown with yellow fringe of scales; plumula yellow haired.

Abdomen. Dull brownish black dorsally, brownish ventrally, with sparse black hairs on posterior portion of tergites III-VI; tergite I with pale yellow pile laterally, a few yellow hairs extending medially, with black scales dorsally; tergite II with pale yellow hairs anterolaterally, black hairs posterolaterally, with transverse band of yellow scales and sparse yellow hairs on anterior half, black scales and sparse black hairs on posterior half; tergites III, V-VI with intermixed yellow and black hairs laterally, with black scales on anterior half, yellow scales on posterior half; tergite IV with broader band of yellow scales on posterior 2/3-3/4, black scales elsewhere; venter with sparse long fine yellow hairs, with row of yellow scales on posterior half of each segment.

Genitalia (fig. 4). As in generic description with the following specific characters: in lateral view with basistylus narrower on upper half than on lower half, posteroventral portion angled, not rounded; dististylus cameliform, with small hooked apex; epiphallus recurved dorsally at apex, in ventral view epiphallus very broad, slightly tapering to flat, slightly rounded apex; aedeagal sheath pointed, bifid only at extreme apex; aedeagus completely sheathed within dorsal epiphallic process; bulb of aedeagus large, rounded, about 1/2 height of ventral epiphallic process; basal aedeagal apodeme small, rounded, held within basistylus shell; lateral rami small, elliptical; epandrium subtriangular, rounded posteriorly; cercus large, well exerted.

Measurements. Length of body. 4.0-7.0 mm. Length of wing: 4.5-7.0 mm.

Female. As in male with differences as follows:

Head. Eyes slightly diverging from ocellar tubercle to antennae, not converging just anterior to ocellar tubercle; hind margin of eyes indented laterally much more at point of bisection.

Thorax. Mesonotum with sparser short erect black hairs; these hairs not intermixed with yellow pile anteriorly; pleura with sparser black pile; propleuron intermixed yellow and brown to black pilose; sternopleuron predominantly with long yellow tomentose hairs; posteriorly directed tuft of hairs on mesopleuron yellow.

Wing. Yellow scales at base of costal vein dull

yellow, some orange scales may be intermixed in some specimens, none reflecting silver color; fringe of scales of squama white to pale yellow; plumula white haired.

Abdomen. Yellow hairs and tomentum in males replaced with white hairs and tomentum in females; venter with long brown to black hairs and white tomentum.

Genitalia (fig. 5). As in generic description. Measurements. Length of body. 3.0-8.5 mm. Length of wing, 3.5-7.5 mm.

Type material: holotype ♂: Nouméa, 17. IX.1940 (F. X. WILLIAMS). BPBM Type n° 14753. Paratypes: LOYALTY ISLANDS: Lifou Island: Wè, II.1962, 16-18.II.1963 (KRAUSS, YOSHIMOTO): 7 ♀♀. Maré Island: La Roche, III.1959 (KRAUSS): 2 ♂♂. Ouvéa Island: Fayoué, 0-50 m. I.1969 (KRAUSS): 2 ♂♂ (all in BPBM). NEW CALEDONIA: topotypic, 16.X.1940 (WILLIAMS): 1 ♂♂; 7.II.1971 (KRAUSS): 40 ♀♀; 20.II.1963 (YOSHIMOTO & KRAUSS): 1 ♀; 22-23.IX.1963 (R. STRAATMAN): 1 ♀. Anse Vata, 23-27.X.1958. 1-2.XI.1958 (JOYCE): 5 ♀♀; 30.III.1961 (SEDLACEK): 1 ♀. Canala, 11. XI.1958 (JOYCE): 2 ♀♀. Col de la Pirogue, 13.IX.1940 (WILLIAMS): 1 ♂♂. Col de Pêchécara, 300-450 m. 8.I.1969 (KRAUSS): 1 ♀. Hienghène, 25.XI.1958 (JOYCE): 1 ♀. Humboldt & Kaloué-hola Riv. Junction, 100 m, 14.XII.1963 (STRAATMAN): 1 ♀. Mouirange Pass, 1.1962 (KRAUSS): 1 ♀. Nakéty, 9.X.1940 (WILLIAMS): 1 ♂♂. Mountains above Ouaco, 20.X.1958 (JOYCE): 1 ♀. Oua Tom, 20.IX.1940 (WILLIAMS): 1 ♂♂ (all BPBM). Rivière Bleue, 310 m, maquis sur crête, 25.XI.8.XII.1986 (L. BONNET de LAROGNE, J. CHAZEAU, A. & S. TILLIER): 4 ♀♀; same data, 5-20.I.1987 (same collectors): 1 ♀; same data, no date (same collectors): 3 ♀♀ (all MNHN).

Paratypes of some of the BPBM material will be deposited in the British Museum (Natural History), London and the National Museum of Natural History, Washington, D.C.

Discussion: the shape of the dististylus and epiphallus of the male genitalia should serve to distinguish this species from its congeners. The undescribed species from Vanuatu occurs on islands just to the east of the Loyalty Islands where *greatheadi* occurs, but differs in the amount of wing infuscation in the costal and subcostal cells as well as the abdominal banding.

Etymology : this species is named for D' D. J. GREATHEAD, who has done much to clarify the generic concepts within the *Villa*-group of genera of this family.

Genus *VILLA* Lioy, 1864

Villa macquarti Evenhuis, 1989

CURRAN'S (1929) listing of this species (as *basalis* Macquart) is the first record for this species outside of Australia. In the present study, an additional four specimens were examined that fit the description of *macquarti* Evenhuis (*mac-*

quarti is a replacement name for the preoccupied *basalis* Macquart). Until a revision of the species of *Villa* of Australia and the Pacific is completed, it is impossible to identify with certainty any of the species of *Villa* occurring in these areas. The specimens from New Caledonia are therefore provisionally placed here as *macquarti* pending further study.

Material : Anse Vata, 25.X, 9.XI.1958 (C. R. JOYCE) : 3 ♀. Nouméa, 7.II.1971 (N. L. H. KRAUSS) : 1 ♀ (all BPBM).

Distribution : known from Australia and New Caledonia.

ACKNOWLEDGEMENTS

I thank D' LOÏC MATILE for encouraging this study and for entrusting me with the study of the New Caledonian bee fly material in his care.

New Caledonian bee fly material in his care.

REFERENCES

- BOWDEN, J., 1971. — The Bombyliidae collected by the Noona Dan Expedition in the Philippines and Bismarck Islands (Insecta, Diptera). *Steenstrupia*, **1** : 309-322.
- CURRAN, C. H., 1929. — Diptera collected by Prof. and Mrs. COCKERELL in New Caledonia and Fiji islands. *Am. Mus. Novit.*, **375** : 1-15.
- EVENHUIS, N. L., 1979a. — Studies in Pacific Bombyliidae (Diptera). I. A new species of *Zaclava* from the Loyalty Islands and New Caledonia, with a key to species in the genus. *Pac. Insects*, **20** : 87-89.
- EVENHUIS, N. L., 1979b. — Studies in Pacific Bombyliidae (Diptera). II. Revision of the genus *Geron* of Australia and the Pacific. *Pac. Insects*, **21** : 13-55.
- EVENHUIS, N. L., 1982. — Preliminary considerations on the zoogeography of Oceanic Bombyliidae (Diptera : Brachycera). *Entomol. Generalis*, **8** : 79-86.
- EVENHUIS, N. L., 1985. — The status of the genera of the tribe Anthracini (Diptera : Bombyliidae). *Int. J. Entomol.*, **27** : 162-169.
- EVENHUIS, N. L., 1989. — Family Bombyliidae. In : EVENHUIS, N. L. (ed.), *Catalog of the Diptera of the Australasian and Oceanian Regions*. Honolulu, Bishop Museum Press; Leiden, Brill : 360-374.
- GREATHEAD, D. J., 1981. — The *Villa* group of genera in Africa and Eurasia with a review of the genera comprising *Thyridanthrax* sensu Bezzi 1924 (Diptera : Bombyliidae). *J. Nat. Hist.*, **15** : 309-326.
- HALL, J. C., 1975. — The Bombyliidae of Chile. *Univ. Calif. Publ. Entomol.*, **76** : 1-278.
- WILLIAMS, F. X., 1945. — The aculeate wasps of New Caledonia, with natural history notes. *Proc. Hawaiian Entomol. Soc.*, **12** : 407-451.